IN THE SPECIFICATION

On Page 11, please amend the following paragraphs as shown below:

FIG. 38 depicts one aspect of traveling wave magnetophoresis ~~magentophoresis~~ of the present invention using a traveling wave megnetophoresis device (**170**) to move magnetic particles (**180**) using micro-electromagnetic units (**190**). FIG. 38A, FIG. 38B and FIG. 38C depict the movement of a magnetic particle along a traveling magnetic wave as micro-electromagnetic ~~micro-electromagentic~~ units are energized and deenergized.

FIG. 39 depicts one aspect of a particle switch using traveling wave magnetophoresis ~~magentophoresis~~ of the present invention. **FIG. 39A** depicts a switch (**200**). **FIG. 39B** depicts DC currents used to make traveling magnetic waves and **FIG. 39C** depicts AC currents used to make traveling waves. **FIG. 39D** depicts sinusoidal current in a micro-electromagnetic ~~micro-electromagentic~~ unit of the present invention energized with DC current.

FIG. 40 depicts one aspect of a method of detecting a distribution of cells, such as lymphocytes in a sample using a method of the present, preferably traveling wave magnetophoresis ~~magentophoresis~~.

On Page 19, please amend the following paragraph as shown:

An "electromagnetic ~~electromagentic~~ chip" is a chip that includes at least one electromagnetic unit, such as a micro-electromagnetic unit. The electromagnetic unit can be on the surface of a chip, or can be provided integrally or at least partially integrally, within said chip. For example, an electromagnetic unit can be provided on the surface of a chip or can be imbedded within a chip. Optionally, an electromagnetic unit can be partially imbedded within a chip.

On Page 46 through 47, please amend the following paragraphs as shown:

IV. METHOD FOR MANIPULATING MAGNETIC ~~MAGENTIC~~ PARTICLES

The present invention also includes a method for manipulating magnetic particles or magnetizable particles. This method includes the steps of: providing an electromagnetic chip comprising a plurality of individually addressable micro-electromagnetic units; placing magnetic particles or magnetizable particles onto an exposed surface on or within said electromagnetic chip; and modulating electric currents applied to one or more of said micro-electromagnetic units so as to change the magnetic field distribution over the surface of said electromagnetic chip, thereby altering magnetic forces acting on said magnetic particles or magnetizable ~~magentizable~~ particles. The result of this process is that the magnetic particles or magnetizable particles are moved to or from a locus, preferably a defined locus.

The magnetic particles or magentizable ~~magentizable~~ particles can include at least one moiety, including components of a sample, such as any cells such as blood cells or malignant cells or neoplastic cells. Other preferred moieties include nucleic acid molecules, specific binding reagents such as antibodies and receptors. Particularly preferred moieties are nucleic acid molecules, DNA, RNA, polypeptides, proteins, carbohydrates, lipids, prokaryotic cells, eukaryotic cells, prions, viruses, parasites, antibodies, lectins, receptors or components of samples including cells such as blood cells, malignant cells or neoplastic cells.

The moiety is preferably linked to the magnetic or magnetizable ~~magentizable~~ particles. Linking can be by indirectly attaching or directly attaching the moiety to the magnetic particles or magnetizable ~~magentizable~~ particles. Indirect attachment can be accomplished using a variety of methods, such as via aggregation or the use of specific binding members such as antibodies or receptors. Direct attachment can be accomplished by using a variety of methods such as chemical linkers, linking molecules or direct coupling of the moiety to a magnetic particle or magnetizable ~~magentizable~~ particle, such as when such particles are activated to include appropriate functional groups such as in the functional layer of the present invention.

On Page 52, please amend the following paragraph as shown:

One preferred aspect of the present invention is the use of a traveling electromagnetic wave, which can also be described as traveling wave magnetophoresis ~~magentophoresis~~. Traveling wave magnetophoresis refers to the movement of a magnetic particle or magnetizable particle under the influence of a traveling magnetic wave. Such traveling magnetic waves can be made using the compositions and methods of the present invention. Magnetophoresis can use synchronized or be continuous. In synchronized magnetophoresis, a DC current is used such that the electromagnetic units can be address sequentially. The sequentially addressed electromagnetic units are energized in an order, such as a predetermined order, such that the magnetic particle or magnetizable ~~magentizable~~ particle transfers from one location to another. This sequence of events causes a traveling magnetic wave to form. In continuous magnetophoresis, an AC current is used such that the electromagnetic units are addressed using currents that are out of phase, such as but not limited to about 90 degrees out of phase. Alternative phase shifts can be utilized. The phase shifts cause a traveling magnetic wave to form.

On Page 53, please amend the following paragraphs as shown:

A traveling wave magnetophoresis structure can include an appropriate number of individual electromagnetic units. These electromagnetic units can be of any appropriate size, shape and strength such that the traveling wave magnetophoresis event occurs. Preferably, a traveling wave magnetophoresis structure include between about 2 and about 1,000, more preferably between about 5 and about 500 and still more preferably between about 10 and about 100 electromagnetic units. The electromagnetic units can be of any appropriate size or configuration and having an appropriate number of coils to allow an appropriate magnetic field to be obtained. Factors to consider include the size of the units, the number of units, the strength of the units, the particles to be moved and

the current to be applied. The methods described herein can be used to design, manufacture and test a variety of such structures and identify those that are capable of performing the function of traveling wave magnetophoresis ~~magentophoresis~~. A variety of electromagnetic units having different combination of such factors can be manufactured and tested for appropriate operation under desirable conditions.

In one preferred aspect of the present invention, different specific binding members can be immobilized on the chip surface, such as on a functional layer, over different loci above the traveling wave magnetophoresis ~~magentophoresis~~ structure. Traveling wave magnetophoresis ~~magentophoresis~~ on particles having moieties bound thereto allows the particles with moieties bound thereto to travel along the traveling wave magnetophoresis structure. Specific binding members at the different loci can capture the particles or moieties as they pass by. During or after such traveling wave magnetophoresis is accomplished, the location of one or moieties can be detected using the same or different detectable labels and/or systems. The signal from the detectable label or detectable system can be detected and optionally quantitated using devices and methods known in the art as appropriate for the particular detectable label or system. Preferred detectable labels are fluorescent and preferred detection systems include fiber optics and CCD devices, preferably fiber optic structures that collect fluorescence emission and transmit the emission to a CCD for measurement and processing.